Journal of
THERMAL BIOLOGY

Editors:
K. BOWLER (U.K.) J. E. HEATH (U.S.A.)

VOLUME CONTENTS, AUTHOR AND
SUBJECT INDEXES
1986

PERGAMON PRESS
Oxford · New York · Beijing
Frankfurt · São Paulo · Sydney · Tokyo · Toronto

Journal of Thermal Biology

Editors

PROFESSOR K. BOWLER: *Department of Zoology*
University of Durham
Durham DH1 3LE, England

PROFESSOR J. E. HEATH: *Department of Physiology and Biophysics, University of Illinois*
Urbana, IL 61801, U.S.A.

Members of the Editorial Board

J. BLIGH (*Fairbanks*)
R. W. CASTENHOLZ (*Eugene*)
B. M. FREEMAN (*Houghton*)
C. GALE (*Washington*)
J. N. R. GRAINGER (*Dublin*)
M. IRIKI (*Yamanashi*)
D. JANKOWSKY (*Kiel*)
K. Y. H. LAGERSPETZ (*Turku*)
A. MALAN (*Strasbourg*)
C. L. PROSSER (*Urbana*)
J. K. RAISON (*Macquarie*)
A. H. ROSE (*Bath*)
J. STOLWIJK (*Yale*)

Aims and Scope

The journal will publish results of work in which the central theme is the mechanisms by which temperature affects living organisms. It will be wide in scope and include studies at the biochemical and physiological level and also at the level of the organism. The following are examples of the subject areas to be covered:

- Studies on the mechanisms involved in acclimation and acclimatization to temperature in plants and animals, including the phenomena of hibernation, dormancy, aestivation and diapause.
- The mechanisms of cellular heat and cold injury, and of the resistance of organisms to extremes of temperature.
- Effects of temperature on growth and development, ageing and life-span.
- Effects of temperature on micro-organisms.
- Behavioural and physiological regulation of body temperature.
- Medical applications of hypo- and hyperthermy, excluding descriptive clinical studies and case-histories.
- Review articles.

Publishing Office
Journals Production Unit, Pergamon Journals Ltd, Hennock Road, Marsh Barton, Exeter, Devon EX2 8NE, England (*Tel.* Exeter (0392) 51558; *Telex* 42749)

Subscription and Advertising Offices
North America: Pergamon Journals Inc., Maxwell House, Fairview Park, Elmsford, NY 10523, U.S.A.
Rest of the World: Pergamon Journals Ltd, Headington Hill Hall, Oxford OX3 0BW, England (*Tel.* Oxford (0865) 64881).

Subscription Rates
Annual institutional subscription rate (1987) DM 375.00; 2-year institutional rate (1987/88) DM 712.50; personal subscription rate for those whose library subscribes at the regular rate (1987) DM 157.00. Prices are subject to amendment without notice.

Microform Subscriptions and Back Issues
Back issues of all previously published volumes are available in the regular editions and on microfilm and microfiche. Current subscriptions are available on microfiche simultaneously with the paper editions and on microfilm on completion of the annual index at the end of the subscription year.

Published quarterly.

Copyright © 1987 Pergamon Journals Ltd

It is a condition of publication that manuscripts submitted to this journal have not been published and will not be simultaneously submitted or published elsewhere. By submitting a manuscript, the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. However, assignment of copyright is not required from authors who work for organizations which do not permit such assignment. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microform or any other reproductions of similar nature and translations. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, mechanical photocopying, recording or otherwise, without permission in writing from the copyright holder.

Photocopying information for users in the U.S.A. The Item-fee Code for this publication indicates that authorization to photocopy items for internal or personal use is granted by the copyright holder for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service provided the stated fee for copying, beyond that permitted by Section 107 or 108 of the United States Copyright Law, is paid. The appropriate remittance of $3.00 per copy per article is paid directly to the Copyright Clearance Center Inc., 21 Congress Street, Salem, MA 01970.

Permission for other use. The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works or for resale. Specific written permission must be obtained from the publisher for such copying.

The Item-Fee Code for this publication is: 0306-4565/87 $3.00 + 0.00

VOLUME CONTENTS

VOLUME 11, 1986

NUMBER 1

Minireview

T. A. Dettlaff 1 The rate of development in poikilothermic animals calculated in astronomical and relative time units

General Papers

F. O. I. Arene 9 *Ascaris suum*: influence of embryonation temperature on the viability of the infective larva

G. P. Raaphorst and E. I. Azzam 17 Thermotolerance and thermal sensitization in a differentiating murine erythroleukemia cell line

K. Ivanov, V. Konstantinov, N. Danilova, N. Sleptchuck and G. Rumiantsev 25 Thermoreceptor distribution in different skin layers and its significance for thermoregulation

Mara L. Manis and Dennis L. Claussen 31 Environmental and genetic influences on the thermal physiology of *Rana sylvatica*

B. J. McGarry and H. M. Frankel 37 Effect of progressive hyperthermia on systemic and pulmonary circulation in the rat (*Rattus norvegicus*)

E. Turlejska and J. Łyszczarz 41 Dehydration does not influence the summer versus winter thermal adaptation changes in rabbits (*Oryctolagus cuniculus*), living in natural photoperiod

J. P. Ritchart and V. H. Hutchison 47 The effects of ATP and cAMP on the thermal tolerance of the mudpuppy, *Necturus maculosus*

Gabriel Osuide, Charles Wambebe and Subhash Bodhankar 53 Alteration of 5-hydroxytryptophan-induced hypothermia by serotonergic agents in the adult domestic fowl (*Gallus domesticus*)

Christopher J. Gordon, Merrit D. Long, Kimi S. Fehlner and Andrew G. Stead 59 Body temperature in the mouse, hamster, and rat exposed to radiofrequency radiation: an interspecies comparison

Glenn E. Walsberg and Wesley W. Weathers 67 A simple technique for estimating operative environmental temperature

NUMBER 2

M. Nichelmann, Z. Szelényi and B. M. Freeman v Foreword

Kurt Brück 73 Basic mechanisms in thermal long-term and short-term adaptation

L. Janský, S. Vybíral, J. Moravec, J. Nacházel, W. Riedel, E. Simon and C. Simon-Oppermann 79 Neuropeptides and temperature regulation

Zoltán Szelényi 85 Lower brainstem mechanisms of body temperature regulation in the guinea-pig (*Cavia aperea porcellus*)

M. J. Dauncey and D. L. Ingram 89 Acclimatization to warm or cold temperatures and the role of food intake

Fr.-K. Pierau, J. Szolcsányi and H. Sann 95 The effect of capsaicin on afferent nerves and temperature regulation of mammals and birds

Miklós Székely 101 Capsaicin-induced changes in behavioural thermoregulation of newborn rabbits (*Lepus cuniculus*)

M. Jurkschat, A. Burmeister, M. Nichelmann and E. Thomas	105	A mathematical equation to describe the influence of age, wind speed and ambient temperature on heat production in turkeys (*Meleagris gallopavo*)
B. Tzschentke and M. Nichelmann	109	The influence of wind speed on heat production in laying hybrids (*Gallus domesticus*) of different ages at various relative humidities
J. Stolpe	115	The combined effect of temperature and air movement on the growth and thermoregulatory functions of fattening pigs
A. Burmeister, M. Jurkschat and M. Nichelmann	117	Influence of stocking density on the heat balance in the domestic fowl (*Gallus domesticus*)
M. Nichelmann, E. Baranyiová, R. Goll and B. Tzschentke	121	Influence of feather cover on heat balance in laying hens (*Gallus domesticus*)
M. Herremans and E. Decuypere	127	Heat production of artificially defeathered dwarf cockerels at different ambient temperatures
M. W. A. Verstegen, W. van der Hel, R. Duijghuisen and R. Geers	131	Diurnal variation in the thermal demand of growing pigs
R. Geers, V. Goedseels, B. de Laet and M. W. A. Verstegen	137	Relationships between transport conditions and the occurrence of cough in growing pigs
R. Klopp, W. Niemer and W. Schippel	139	Use of liquid-crystal thermography of the tail of the rat to determine appropriate conditions for plethysmography
Announcement	I	

NUMBER 3

J. Bouletreau-Merle, O. Terrier and P. Fouillet	143	Developmental temperature as a selective factor in balancing polymorphisms in *D. melanogaster* populations
P. Lenzi, J. P. Libert, C. Franzini, T. Cianci and P. L. Guidalotti	151	Short-term thermoregulatory adjustments involving opposite regional temperature changes
Razi Dmi'el	157	Selective sweat secretion and panting modulation in dehydrated goats
P. E. Wheeler	161	Thermal acclimation of metabolism and preferred body temperature in lizards
B. P. Ushakov† and I. M. Pashkova	167	Populational analysis of thermal responses—I. Changes in the heat resistance of muscle tissue and contractile muscle models of *Salamandra salamandra* larvae
B. P. Ushakov† and I. M. Pashkova	175	Populational analysis of thermal responses—II. Changes in the rate of development of *Salamandra salamandra* larvae
Günter Schingnitz and Jürgen Werner	181	Significance of scrotal afferents within the general thermoafferent system

NUMBER 4

Janusz Janiszewski	191	The effect of temperature changes on the spontaneous activity in the neural ganglia of the cockroach, *Periplaneta americana*
O. Shido, Y. Sugano and T. Nagasaka	199	Circadian change of heat loss in response to change in core temperature in rats

Margaret A. Kolka, Lou A. Stephenson and Richard R. Gonzalez	203	Environmental stress after atropine treatment
Bernard F. Murphy Jr	209	The effect of acclimation temperature and the removal of peripheral temperature receptors on body temperature preference in the cockroach, *Periplaneta americana*
M. P. Thomas, S. M. Martin and J. M. Horowitz	213	Temperature effects on evoked potentials of hippocampal slices from noncold-acclimated, cold-acclimated and hibernating hamsters
Raoul Van Damme, Dirk Bauwens and Rudolf F. Verheyen	219	Selected body temperatures in the lizard *Lacerta vivipara*: Variation within and between populations
R. Keith Dupre, James W. Hicks and Stephen C. Wood	223	The effect of hypoxia on evaporative cooling thresholds of lizards
Gero Feistkorn, Hanna Kaciuba-Uscilko, Stanisław Kozłowski and Claus Jessen	229	Muscle temperature and muscle metabolism during short-term exercise in the goat